

AUS9-2000-0722-US1

**METHOD AND SYSTEM FOR CUSTOMIZED MODIFICATION AND
PRESENTATION OF REMOTELY SAVED WEB CONTENT**

BACKGROUND OF THE INVENTION

5

1. Field of the Invention

The present invention relates to an improved data processing system and, in particular, to a method and apparatus for multicomputer data transferring. Still
10 more particularly, the present invention provides a method and apparatus for computer-to-computer data storage.

2. Description of Related Art

15 The commercial use of the Internet has dramatically increased the use of technology. It is now commonplace to assume that individuals and enterprises have access to digital communication services. The amount of electronic communication on the Internet is growing rapidly, as is
20 the amount of content on the World Wide Web.

Many different types of Web-based tools or utilities have been developed to assist users in navigating the Web. For example, when a user is looking for certain information, search engines allow a user to find content,
25 whereas bookmark utilities store Web addresses so that a user can quickly return to Web sites that have content in which the user is interested.

Most of the operations on the Web, including the navigational utilities, can be described with reference
30 to a client-server organizational model. Web-browsers have the ability to store and manage lists of bookmarks

AUS9-2000-0722-US1

as a client-side utility, but many Web portals now offer storage and management of bookmarks as a server-side utility. While browsers have always had the ability to save Web pages being viewed by a user into the user's client-side storage, a browser's save operation generally captures only the main Web page without capturing other content objects which have been linked into the Web page. Small client applications have been developed that allow a user to capture the content of an entire Web page or of an entire Web site into the user's client-side storage. However, some Web sites now offer server-side storage and management of captured content as a server-side utility.

Server-side storage and management of captured Web pages and bookmarks are convenient for mobile users. The bookmarks and captured content are accessible from the server by any client using a browser and an Internet connection rather than being stored on a client that is inaccessible to a mobile user unless the client is running some type of remote access utility.

However, the server-side utilities are rigidly structured; they accept and store captured bookmarks and captured content, but the server controls the manner in which the content is stored for the user. The user is only able to perform certain administrative functions with respect to the content stored at the server.

Therefore, it would be advantageous to have a method and system in which a user could customize server-side storage of captured bookmarks and captured content. It would be particularly advantageous to allow a user to specify customization parameters within a browser.

AUS9-2000-0722-US1

SUMMARY OF THE INVENTION

A method, system, apparatus, and computer program product are presented for customizing the storage of captured Web content. The client receives a file, generally a Web page, in response to a request to by a user to browse the Web page. The Web page may be displayed by a browser application, and the user may select a user interface control within the browser that indicates that the user desires to capture the content being displayed by the browser and push the content to the server for customized processing. The browser automatically retrieves an address of a server at which the user has previously established a user account for the capture service. Other user-specified parameters can also be retrieved by the browser for sending to the server. The captured data and user parameters are sent to the server.

The server receives the data, and assuming that the user is authorized for processing data at the server, the server automatically stores the captured data received from the client at the server. In addition, the server automatically retrieves a Web page and automatically modifies the retrieved Web page by inserting a hyperlink to the captured data received from the client. The server then automatically stores the modified Web page. Preferably, the server executes server-side scripts for modifying the Web page. In this manner, the user can customize the manner in which the server processes the Web page and/or the captured data so that the hyperlinks are available in a manner preferred by the user.

AUS9-2000-0722-US1

BRIEF DESCRIPTION OF THE DRAWINGS

The novel features believed characteristic of the invention are set forth in the appended claims. The invention itself, further objectives, and advantages thereof, will be best understood by reference to the following detailed description when read in conjunction with the accompanying drawings, wherein:

Figure 1A depicts a typical distributed data processing system in which the present invention may be implemented;

Figure 1B depicts a typical computer architecture that may be used within a data processing system in which the present invention may be implemented;

Figure 2 is a block diagram depicting a typical network in which prior art Web-based services are available from servers to a user at a client machine;

Figure 3 is a block diagram depicting a Web server for customized storage of captured Web files in accordance with a preferred embodiment of the present invention;

Figures 4A-4C depict a set of graphical user interface windows that show the manner in which a user accesses an application to capture Web pages in accordance with a preferred embodiment of the present invention;

Figures 5A-5B depict a set of graphical user interface windows that show a simple personal Web page that is modified in accordance with a preferred embodiment of the present invention;

AUS9-2000-0722-US1

Figure 5C is an example of a URL generated by the server-side utility for storing captured Web pages is shown in accordance with a preferred embodiment of the present invention; and

5 **Figures 6A-6C** are a set of flowcharts depicting the various steps that may be used to capture and to customizably process files in conjunction with previously created Web pages in accordance with a preferred embodiment of the present invention.

10

11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000
1001
1002
1003
1004
1005
1006
1007
1008
1009
1010
1011
1012
1013
1014
1015
1016
1017
1018
1019
1020
1021
1022
1023
1024
1025
1026
1027
1028
1029
1030
1031
1032
1033
1034
1035
1036
1037
1038
1039
1040
1041
1042
1043
1044
1045
1046
1047
1048
1049
1050
1051
1052
1053
1054
1055
1056
1057
1058
1059
1060
1061
1062
1063
1064
1065
1066
1067
1068
1069
1070
1071
1072
1073
1074
1075
1076
1077
1078
1079
1080
1081
1082
1083
1084
1085
1086
1087
1088
1089
1090
1091
1092
1093
1094
1095
1096
1097
1098
1099
1100
1101
1102
1103
1104
1105
1106
1107
1108
1109
1110
1111
1112
1113
1114
1115
1116
1117
1118
1119
1120
1121
1122
1123
1124
1125
1126
1127
1128
1129
1130
1131
1132
1133
1134
1135
1136
1137
1138
1139
1140
1141
1142
1143
1144
1145
1146
1147
1148
1149
1150
1151
1152
1153
1154
1155
1156
1157
1158
1159
1160
1161
1162
1163
1164
1165
1166
1167
1168
1169
1170
1171
1172
1173
1174
1175
1176
1177
1178
1179
1180
1181
1182
1183
1184
1185
1186
1187
1188
1189
1190
1191
1192
1193
1194
1195
1196
1197
1198
1199
1200
1201
1202
1203
1204
1205
1206
1207
1208
1209
1210
1211
1212
1213
1214
1215
1216
1217
1218
1219
1220
1221
1222
1223
1224
1225
1226
1227
1228
1229
1230
1231
1232
1233
1234
1235
1236
1237
1238
1239
1240
1241
1242
1243
1244
1245
1246
1247
1248
1249
1250
1251
1252
1253
1254
1255
1256
1257
1258
1259
1260
1261
1262
1263
1264
1265
1266
1267
1268
1269
1270
1271
1272
1273
1274
1275
1276
1277
1278
1279
1280
1281
1282
1283
1284
1285
1286
1287
1288
1289
1290
1291
1292
1293
1294
1295
1296
1297
1298
1299
1300
1301
1302
1303
1304
1305
1306
1307
1308
1309
1310
1311
1312
1313
1314
1315
1316
1317
1318
1319
1320
1321
1322
1323
1324
1325
1326
1327
1328
1329
1330
1331
1332
1333
1334
1335
1336
1337
1338
1339
1340
1341
1342
1343
1344
1345
1346
1347
1348
1349
1350
1351
1352
1353
1354
1355
1356
1357
1358
1359
1360
1361
1362
1363
1364
1365
1366
1367
1368
1369
1370
1371
1372
1373
1374
1375
1376
1377
1378
1379
1380
1381
1382
1383
1384
1385
1386
1387
1388
1389
1390
1391
1392
1393
1394
1395
1396
1397
1398
1399
1400
1401
1402
1403
1404
1405
1406
1407
1408
1409
1410
1411
1412
1413
1414
1415
1416
1417
1418
1419
1420
1421
1422
1423
1424
1425
1426
1427
1428
1429
1430
1431
1432
1433
1434
1435
1436
1437
1438
1439
1440
1441
1442
1443
1444
1445
1446
1447
1448
1449
1450
1451
1452
1453
1454
1455
1456
1457
1458
1459
1460
1461
1462
1463
1464
1465
1466
1467
1468
1469
1470
1471
1472
1473
1474
1475
1476
1477
1478
1479
1480
1481
1482
1483
1484
1485
1486
1487
1488
1489
1490
1491
1492
1493
1494
1495
1496
1497
1498
1499
1500
1501
1502
1503
1504
1505
1506
1507
1508
1509
1510
1511
1512
1513
1514
1515
1516
1517
1518
1519
1520
1521
1522
1523
1524
1525
1526
1527
1528
1529
1530
1531
1532
1533
1534
1535
1536
1537
1538
1539
1540
1541
1542
1543
1544
1545
1546
1547
1548
1549
1550
1551
1552
1553
1554
1555
1556
1557
1558
1559
1560
1561
1562
1563
1564
1565
1566
1567
1568
1569
1570
1571
1572
1573
1574
1575
1576
1577
1578
1579
1580
1581
1582
1583
1584
1585
1586
1587
1588
1589
1590
1591
1592
1593
1594
1595
1596
1597
1598
1599
1600
1601
1602
1603
1604
1605
1606
1607
1608
1609
1610
1611
1612
1613
1614
1615
1616
1617
1618
1619
1620
1621
1622
1623
1624
1625
1626
1627
1628
1629
1630
1631
1632
1633
1634
1635
1636
1637
1638
1639
1640
1641
1642
1643
1644
1645
1646
1647
1648
1649
1650
1651
1652
1653
1654
1655
1656
1657
1658
1659
1660
1661
1662
1663
1664
1665
1666
1667
1668
1669
1670
1671
1672
1673
1674
1675
1676
1677
1678
1679
1680
1681
1682
1683
1684
1685
1686
1687
1688
1689
1690
1691
1692
1693
1694
1695
1696
1697
1698
1699
1700
1701
1702
1703
1704
1705
1706
1707
1708
1709
1710
1711
1712
1713
1714
1715
1716
1717
1718
1719
1720
1721
1722
1723
1724
1725
1726
1727
1728
1729
1730
1731
1732
1733
1734
1735
1736
1737
1738
1739
1740
1741
1742
1743
1744
1745
1746
1747
1748
1749
1750
1751
1752
1753
1754
1755
1756
1757
1758
1759
1760
1761
1762
1763
1764
1765
1766
1767
1768
1769
1770
1771
1772
1773
1774
1775
1776
1777
1778
1779
1780
1781
1782
1783
1784
1785
1786
1787
1788
1789
1790
1791
1792
1793
1794
1795
1796
1797
1798
1799
1800
1801
1802
1803
1804
1805
1806
1807
1808
1809
1810
1811
1812
1813
1814
1815
1816
1817
1818
1819
1820
1821
1822
1823
1824
1825
1826
1827
1828
1829
1830
1831
1832
1833
1834
1835
1836
1837
1838
1839
1840
1841
1842
1843
1844
1845
1846
1847
1848
1849
1850
1851
1852
1853
1854
1855
1856
1857
1858
1859
1860
1861
1862
1863
1864
1865
1866
1867
1868
1869
1870
1871
1872
1873
1874
1875
1876
1877
1878
1879
1880
1881
1882
1883
1884
1885
1886
1887
1888
1889
1890
1891
1892
1893
1894
1895
1896
1897
1898
1899
1900
1901
1902
1903
1904
1905
1906
1907
1908
1909
1910
1911
1912
1913
1914
1915
1916
1917
1918
1919
1920
1921
1922
1923
1924
1925
1926
1927
1928
1929
1930
1931
1932
1933
1934
1935
1936
1937
1938
1939
1940
1941
1942
1943
1944
1945
1946
1947
1948
1949
1950
1951
1952
1953
1954
1955
1956
1957
1958
1959
1960
1961
1962
1963
1964
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
2040
2041
2042
2043
2044
2045
2046
2047
2048
2049
2050
2051
2052
2053
2054
2055
2056
2057
2058
2059
2060
2061
2062
2063
2064
2065
2066
2067
2068
2069
2070
2071
2072
2073
2074
2075
2076
2077
2078
2079
2080
2081
2082
2083
2084
2085
2086
2087
2088
2089
2090
2091
2092
2093
2094
2095
2096
2097
2098
2099
2100
2101
2102
2103
2104
2105
2106
2107
2108
2109
2110
2111
2112
2113
2114
2115
2116
2117
2118
2119
2120
2121
2122
2123
2124
2125
2126
2127
2128
2129
2130
2131
2132
2133
2134
2135
2136
2137
2138
2139
2140
2141
2142
2143
2144
2145
2146
2147
2148
2149
2150
2151
2152
2153
2154
2155
2156
2157
2158
2159
2160
2161
2162
2163
2164
2165
2166
2167
2168
2169
2170
2171
2172
2173
2174
2175
2176
2177
2178
2179
2180
2181
2182
2183
2184
2185
2186
2187
2188
2189
2190
2191
2192
2193
2194
2195
2196
2197
2198
2199
2200
2201
2202
2203
2204
2

AUS9-2000-0722-US1

DETAILED DESCRIPTION OF THE INVENTION

With reference now to the figures, **Figure 1A** depicts
5 a typical network of data processing systems, each of
which may implement the present invention. Distributed
data processing system 100 contains network 101, which is
a medium that may be used to provide communications links
10 between various devices and computers connected together
within distributed data processing system 100. Network
101 may include permanent connections, such as wire or
fiber optic cables, or temporary connections made through
telephone or wireless communications. In the depicted
example, server 102 and server 103 are connected to
15 network 101 along with storage unit 104. In addition,
clients 105-107 also are connected to network 101.
Clients 105-107 and servers 102-103 may be represented by
a variety of computing devices, such as mainframes,
personal computers, personal digital assistants (PDAs),
20 etc. Distributed data processing system 100 may include
additional servers, clients, routers, other devices, and
peer-to-peer architectures that are not shown.

In the depicted example, distributed data processing
system 100 may include the Internet with network 101
25 representing a worldwide collection of networks and
gateways that use various protocols to communicate with
one another, such as Lightweight Directory Access Protocol
(LDAP), Transport Control Protocol/Internet Protocol
(TCP/IP), Hypertext Transport Protocol (HTTP), Wireless
30 Application Protocol (WAP), etc. Of course, distributed
data processing system 100 may also include a number of

AUS9-2000-0722-US1

different types of networks, such as, for example, an intranet, a local area network (LAN), or a wide area network (WAN). For example, server 102 directly supports client 109 and network 110, which incorporates wireless communication links. Network-enabled phone 111 connects to network 110 through wireless link 112, and PDA 113 connects to network 110 through wireless link 114. Phone 111 and PDA 113 can also directly transfer data between themselves across wireless link 115 using an appropriate technology, such as Bluetooth™ wireless technology, to create so-called personal area networks (PAN) or personal ad-hoc networks. In a similar manner, PDA 113 can transfer data to PDA 107 via wireless communication link 116.

The present invention could be implemented on a variety of hardware platforms; **Figure 1A** is intended as an example of a heterogeneous computing environment and not as an architectural limitation for the present invention.

With reference now to **Figure 1B**, a diagram depicts a typical computer architecture of a data processing system, such as those shown in **Figure 1A**, in which the present invention may be implemented. Data processing system 120 contains one or more central processing units (CPUs) 122 connected to internal system bus 123, which interconnects random access memory (RAM) 124, read-only memory 126, and input/output adapter 128, which supports various I/O devices, such as printer 130, disk units 132, or other devices not shown, such as a audio output system, etc. System bus 123 also connects communication adapter 134 that provides access to communication link 136. User

AUS9-2000-0722-US1

interface adapter 148 connects various user devices, such as keyboard 140 and mouse 142, or other devices not shown, such as a touch screen, stylus, microphone, etc. Display adapter 144 connects system bus 123 to display device 146.

Those of ordinary skill in the art will appreciate that the hardware in **Figure 1B** may vary depending on the system implementation. For example, the system may have one or more processors, such as an Intel® Pentium®-based processor and a digital signal processor (DSP), and one or more types of volatile and non-volatile memory. Other peripheral devices may be used in addition to or in place of the hardware depicted in **Figure 1B**. In other words, one of ordinary skill in the art would not expect to find similar components or architectures within a Web-enabled or network-enabled phone and a fully featured desktop workstation. The depicted examples are not meant to imply architectural limitations with respect to the present invention.

In addition to being able to be implemented on a variety of hardware platforms, the present invention may be implemented in a variety of software environments. A typical operating system may be used to control program execution within each data processing system. For example, one device may run a Unix® operating system, while another device contains a simple Java® runtime environment. A representative computer platform may include a browser, which is a well known software application for accessing hypertext documents in a variety of formats, such as graphic files, word processing files, Extensible Markup

AUS9-2000-0722-US1

Language (XML), Hypertext Markup Language (HTML), Handheld Device Markup Language (HDML), Wireless Markup Language (WML), and various other formats and types of files.

Hence, it should be noted that the distributed data

5 processing system shown in **Figure 1A** is contemplated as being fully able to support a variety of peer-to-peer subnets and peer-to-peer services.

The present invention may be implemented on a variety of hardware and software platforms, as described
10 above. More specifically, though, the present invention is directed to providing a methodology for capturing Web content and addresses by a user via a client's Web browser and storing the captured data at a server in a customized manner. Before describing the present
15 invention in more detail, though, some background information is provided about server-side utilities for storing user content so that one may compare the operational efficiencies and other advantages of the present invention.

20 With reference now to **Figure 2**, a block diagram depicts a typical network, similar to **Figure 1**, in which prior art Web-based services are available from servers to a user at a client machine. Client **202** runs browser application **204**, which displays web page **206** retrieved
25 from Web address **208**. Browser **204** may display various types of content other than Web pages, and the location of the content may be represented by a variety of addresses, such as Uniform Resource Locators (URLs) and Uniform Resource Identifiers (URIs). Browser **204** may
30 also maintain bookmarks **210** for selection by a user.

AUS9-2000-0722-US1

Client 202 maintains local storage 212 for use by browser application 204 and other applications. Browser 204 may store bookmark file 214, browser cache 216, and various types of files, including user-saved Web pages 218.

Client 202 accesses various resources and services throughout the Internet 220. For example, a user may browse content from an online newspaper supported by server 222 and stored within server storage 224. A user may browse his/her own personal Web page 232 supported by an Internet Service Provider (ISP) server 234 connected to storage 236.

Various portal services are operated on the World Wide Web and generally contain large amounts of information. In order to attract users to view advertisements on Web pages, some portals offer the ability of users to store information on a server so that the information is available to the user from more than one client device, which is particularly useful if the user accesses the Internet from more than one machine.

A user at client 202 may store personal bookmark file 242 within storage 244 connected to portal Web server 246. By storing or replicating a copy of a browser bookmark file on the server, the user can have access to the bookmarks from almost any Web-enabled device throughout the Internet.

In a similar manner, a user may store personal captured Web files 252 within storage 254 connected to Web server 256, which may be a commercial service or may be another free service supported by another portal or

AUS9-2000-0722-US1

other type of Web site. As is known in the prior art and depicted within **Figure 2**, after viewing a Web page, a user may decide to capture one or more Web pages. A user may execute a client-side utility to capture one or more Web pages and store the pages locally at the client. If desired, the user may then transfer copies of the captured files for remote storage in a so-called "virtual hard drive". By storing the captured Web files on the server, the files are available to the user from almost any Web-enabled device throughout the Internet. In addition, as the user accesses the Internet from multiple devices, personal captured Web files 252 provides a central location for organizing, viewing, or forwarding the files.

Other prior art services allow a user to transfer files in a very limited manner from one server to another server. For example, the operator of Web server 222 may have a cooperative arrangement with the operator of server 232, and the Web pages at server 222 may contain hypertext links that, when selected by the user, immediately transfer the Web page from server 222 to server 232, assuming that the user supplies the proper authorization information to store the information within the user's account at server 232.

In another prior art service, after viewing a Web page, a user may decide to capture one or more Web pages. The user may select a control within a toolbar of the browser application to capture one or more Web pages and store the pages remotely at the server. The user may then view the captured files in a hierarchically structured, file-system-type manner similar to viewing

AUS9-2000-0722-US1

files within directories on the client. For example, the files can be arranged into folders, sent to other users, etc.

With reference now to **Figure 3**, a block diagram depicts a Web server for customized storage of captured Web files in accordance with a preferred embodiment of the present invention. In a manner similar to **Figure 2**, **Figure 3** shows various components within the Internet that a user may access to retrieve information. Client 302 runs browser application 304, which displays web page 306 retrieved from Web address 308. Browser 304 may also maintain bookmarks 310 for selection by a user using application options and controls within browser 304. Client 302 maintains local storage 312; browser 304 may store bookmark file 314, browser cache 316, and various types of files, including user-saved Web pages 318. Client 302 accesses various resources and services throughout the Internet 320. In this example, a user may browse content from an online newspaper supported by server 322 and stored within server storage 324.

The present invention provides a methodology by which a user may browse Web pages and then, when desired, capture those Web pages for later viewing, editing, or other processing in a customized manner. By selecting an application control within browser 304, a user can request that browser 304 push Web page 306 to server 332, which stores the captured Web page in server storage 334. It should be noted that other types of content may also be captured other than Web pages, such as graphic files,

AUS9-2000-0722-US1

text files, audio and video files, general binary data files, etc.

It is assumed that the user of client 302 has previously registered in some manner to create a personal account so that the user is authorized by the owner or operator of server 332 to access services provided via server 332. After the user has been registered, the user is allocated a certain amount of online storage space 336 in which the user may store various types of data. In a manner similar to that shown in **Figure 2**, captured Web files 338 and personal bookmark file 340 may be stored in storage 334.

In contrast to the prior art, however, a user's personal Web page 342 contains links 344 to the captured Web files, and the links have been created by executing one or more server-side scripts, Java applets, etc., such as personal capture scripts 346 or default capture scripts 348. During the operation of pushing the captured data to the server, the server runs one or more scripts against the incoming data and the previously stored Web pages in order to automatically create hypertext links within a user's personal Web page in a customized manner. **Figures 4A-4C** shown the manner in which a user can capture Web pages or other files.

Figures 5A-5B show a simple example of the manner in which a Web page can be customizably modified to include links to captured data. **Figures 6A-6C** show a set of flowcharts that depict the various steps that may be used to capture and customizably process files in conjunction with previously created Web pages.

AUS9-2000-0722-US1

With reference now to **Figures 4A-4C**, a set of graphical user interface windows show the manner in which a user accesses an application to capture Web pages in accordance with a preferred embodiment of the present invention. Referring to **Figure 4B**, window **400** shows a typical browser application for viewing Web pages or other Internet-based or Web-based content. Buttons **402** allow a user to navigate through various Web sites, while location indicator **404** shows the address of the Web site of the Web page that is being viewed by the user or the address being retrieved by the browser. Content area **406** shows the actual content to the user.

Referring to **Figure 4B**, window **400** shows file menu **412**, as might be similarly found in prior art browsers. However, in the present invention file menu **412** contains menu item **414** which enables a user to invoke the capture facility of the present invention for capturing content within the browser and pushing the content to a Web server. Alternatively, other application controls could be available to the user, such as alternate-button-click on the mouse attached to the client device, sometime called the "right-click" features. Other controls, such as a control button within a toolbar, may also be used.

Referring to **Figure 4C**, window **420** depicts a preference dialog box through which a user specifies preferences for optional ways in which the browser may operate. As is typical in many browsers, a user may select various options, and the browser changes the manner in which it operates in accordance with the chosen preferences. The options are organized into categories

AUS9-2000-0722-US1

422. In this example, category 424 for "server-side storage" is depicted as having been chosen by a user.

Server-side storage configuration preferences 426 depict various fields that a user may use to specify the parameters may be needed by a server that operates the

Entry field 428 allows a user specify the location of the server to which captured data should be pushed for storage and processing. Entry fields 430 and 432 allow a

user to specify a user identity and password for a user account at the server specified within entry field 428.

The browser will forward this information to the server in order to obtain authorization for the user to perform various processes at the server. It should be understood that various mechanism may be used to authenticate a user, such as using a cookie mechanism placed in the client's cookie cache by the server, depending upon the level of security desired by the operator of the server.

Entry field 434 allows a user to specify an address, relative to the server address, for the user's personal Web page that is to be modified to receive hypertext links to captured Web content that has been stored on the server. Entry field 436 allows a user to specify an address of a bookmark file that stores the user's

bookmarks at the server. Entry field 438 allows a user to specify a script that is to be executed at the server;

the script customizes the manner in which Web content that has been captured at the client and pushed to the server is then processed in conjunction with other Web pages that have previously been stored on the server.

AUS9-2000-0722-US1

With reference now to **Figures 5A-5B**, a set of graphical user interface windows show a simple personal Web page that is modified in accordance with a preferred embodiment of the present invention. Referring to **Figure**

5 **5A**, window 500 shows a typical browser application for viewing Web pages or other Internet-based or Web-based content. Buttons 502 allow a user to navigate through various Web sites, while location indicator 504 shows the address of the Web site of the Web page that is being

10 viewed by the user or the address being retrieved by the browser. Content area 506 shows the actual content to the user. In this example, window region 508 contains hypertext links to Web pages that have been captured at the client and pushed to the server. Region 508 contains

15 one hypertext link to a content item that was captured at a specific date; a link to the original URI of the content or to the URI of its Web site is provided; and a hypertext link to the content as stored within the user's personal storage space on the server is also provided.

20 The text of the hypertext link may be derived from the content of the captured content.

Referring to **Figure 5B**, window 500 shows the contents of the user's Web page after the user at the client has selected to capture a Web page, such as the

25 Web page shown in **Figures 4A-4B**, at the user's client and push the Web page to the server using the present invention. After the server received the captured content, the server processed the content through one or more scripts, and the user's Web page was modified by the

30 scripts. Although the user may rely upon the default

AUS9-2000-0722-US1

scripts, the user is able to write or modify other scripts and store those scripts within the server. This allows the user to customize the manner in which the user's Web page, pages, or other files are modified.

5 Region 510 within the Web page now contains another hypertext link 512 to the content item that the user requested to capture.

With reference now to **Figure 5C**, an example of a URL generated by the server-side utility for storing captured
10 Web pages is shown in accordance with a preferred embodiment of the present invention. Preferably, in order to organize the captured content files on the server as they are captured and received from the client, the server automatically assigns a URL to the captured
15 files. In this example, URL 522 contains various portions that depicts a manner of generating unique URLs for multiple users that use the service provided at the server. URL portion 524 shows the address of the Web server or domain at which a service providing the
20 functionality of the present invention may be found. URL portion 526 is the user-relative address that specifies the directory in which the user's captured files are generally stored. This relative address may match a user-specifiable parameter within the user's browser.

25 URL portion 528 is a unique file name that is generated for a captured file. The original URL may be modified in some manner to, such as replacing certain characters with an underscore character. In addition, some URL merely point to an active Web page that changes
30 day-by-day; the user specifies the same URL to reach a Web page, but the contents of the Web page may change

AUS9-2000-0722-US1

frequently while the URL remains the same. Hence, the user may attempt to capture unique content at a given static URL or URI at different times, and the URL or URI should be modified in some manner so that when the
5 captured file or files are transferred to the server, the file names do not collide. In this case, an unique hash value or time stamp might be prefixed to the URL portion prior to storing the file on the server.

In this manner, URL 522 may be used as the
10 referenced resource within an hypertext anchor that is placed within a Web page, e.g. by using URL 522 as a reference in an anchor tag within a Web page structured in accordance with HTML formatting rules. It should be understood, however, that the graphical item that
15 represents a link to the captured content may vary in a variety of manners as is known in the graphical user interface arts. For example, icons may also be embedded within the user's page and used as hyperlinks.

With reference now to **Figures 6A-6C**, a set of
20 flowcharts depict the various steps that may be used to capture and customizably process files in conjunction with previously created Web pages in accordance with a preferred embodiment of the present invention. Referring to **Figure 6A**, the process begins with the user browsing
25 Web pages with a browser application (step 602), after which the user indicates that the user desires to capture the content of the Web page by selecting the appropriate browser control within the browser application (step 604). The browser then retrieves the previously
30 specified user preferences for the capture parameters (step 606) and bundles the necessary information together

AUS9-2000-0722-US1

with the captured content (step 608). The format for the information can vary depending upon the needs to the server. The data may be pushed to the server by the browser using a simple HTTP "Put" message. Other message types may be used as the present invention is not dependent upon a particular format for the transfer of data.

The browser might need to establish a secure session with the server using the user's identity and password; after establishing a session, the browser can then package the content together with its originating URI, the name of the user's preferred directory, the name of the preferred script, and the name of the preferred file to be used to store the hypertext link to the captured content. The browser then pushed the bundled information to the server at the previously specified address (step 610), and the client-side process is complete.

Referring to **Figure 6B**, the server-side process begins with the server receiving the captured content data and other information that is being pushed from the client to the server (step 620). The server, if it has not already done so, may need to authenticate and authorize the user that is requesting the service (step 622). A determination is then made as to whether the data from the client contains a user-specified script (step 624). If so, then the user's script is retrieved (step 626); otherwise, a default script may be retrieved (step 628). It should be understood that the server application may have the necessary functionality embedded within it, and the default processing may be provided by

AUS9-2000-0722-US1

a particular server application, i.e., it does not necessarily have to be placed within a default script.

The server then executes the retrieved script against the received client data and the previously
5 stored user Web page or files (step 630). After the data has been processed, new files are created for the actual captured content, while the user's Web files that were previously stored within the server's storage are modified to include hyperlinks to the captured content
10 (step 632). The overall process is then complete.

Figure 6C provides further detail for the manner in which the server processes the received client data shown as step 630 in **Figure 6B**. The process begins with the server parsing the previously stored user Web page for a
15 location at which to insert the new hyperlink to the newly captured data (step 642). For example, a special markup language tag may be placed within the Web page to demarcate the beginning of the special hyperlinks to the user's captured Web files, and the server or script scans
20 for the special tag.

The server can then parse the client data for an originating URI for the captured data (step 644) while the server generates a new URI or URL for the hyperlink to be associated with the captured content when it is
25 stored within the server's domain (step 646). The manner in which the client data is parsed may vary. For example, rather than capturing an entire Web page, a user may merely copy the URL/URI of the Web page and push the URL/URI to the server as a compact data file. Depending
30 on what is captured and pushed to the server, various content-type indicators may be used to indicate to the

AUS9-2000-0722-US1

server what type of content is being sent, thereby implying the manner in which the content should be processed. In this manner, the URL of a Web page could be captured, pushed to the server, and stored as a
5 hyperlink within the user's Web page. In that case, the hyperlink would not have any associated captured content files.

A new title for the captured data may also be determined (step 648), and the new title may be used as
10 the anchor text for a hypertext link that is placed within the modified user Web page such that the hyperlink references the captured data at the proper location within the server's domain (step 650). The script may perform other formatting activities on the user's Web
15 page as desired by the user or the server operator (step 652), and the process is then complete.

The advantages of the present invention should be apparent in view of the detailed description of the invention that is provided above. In the prior art, a
20 user may capture Web content and store the captured content at a server. Although having the content stored on the server was convenient, the user had little control over the manner in which the captured content was organized. While the user could manipulate the
25 organization of the captured files in accordance with a typical hierarchical system for organizing files in folders, etc.

In contrast, the present invention enables a user to capture Web content or merely URIs via a client's Web
30 browser; the captured content or URIs are then processed and stored in a customized manner at the server. After

AUS9-2000-0722-US1

capturing the content, the user can view the user's Web page. Hyperlinks to the captured content files are conveniently stored in the user's Web page in the manner desired by the user rather than the manner mandated by the service at the server. If desired, the user may subsequently edit the Web page to change the hyperlinks, delete hyperlinks, etc. Since the user is able to specify and/or write a script to perform the processing of the pages into which the hyperlinks are placed, the user has significant control over the manner in which the captured content is presented within a user's own Web pages or other files.

It is important to note that while the present invention has been described in the context of a fully functioning data processing system, those of ordinary skill in the art will appreciate that the processes of the present invention are capable of being distributed in the form of instructions in a computer readable medium and a variety of other forms, regardless of the particular type of signal bearing media actually used to carry out the distribution. Examples of computer readable media include media such as EPROM, ROM, tape, paper, floppy disc, hard disk drive, RAM, and CD-ROMs and transmission-type media, such as digital and analog communications links.

The description of the present invention has been presented for purposes of illustration but is not intended to be exhaustive or limited to the disclosed embodiments. Many modifications and variations will be apparent to those of ordinary skill in the art. The embodiments were chosen to explain the principles of the

invention and its practical applications and to enable others of ordinary skill in the art to understand the invention in order to implement various embodiments with various modifications as might be suited to other contemplated uses.

5

1. The first step is to identify the problem or question that needs to be addressed. This involves understanding the context and the specific requirements of the task.